

How to kickstart an agricultural revolution

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FARMS just produce food, right? Not for long perhaps. If a controversial utopian vision of how to save the world is accepted at a meeting in South Africa next week, farming could undergo its biggest transformation in history.

In this vision, farmers won't just have to produce enough to head off the Malthusian food crisis economists believe is threatening the planet as its population grows ever larger. They will also be made custodians of nature, crusaders in the battle to combat climate change, engines of economic growth and gurus spreading technology and education to the remotest corners of the world.

"Agriculture can do more than just focus on production," says Bob Watson, director of the International Assessment of Agricultural Science and Technology for Development (IAASTD), the project that he hopes will change agriculture forever when the final draft of its report is published on 15 April. "Farming can help supply clean water, it can help to protect biodiversity, and it should be managed in a way that manages our soils sustainably," says Watson, who used to be head of the Intergovernmental Panel on Climate Change (IPCC).

Now Watson wants the IAASTD to do for agriculture what the IPCC has done for climate change, bringing together under one banner the best scientific and technological evidence on what works in farming. Conceived in 2002 by the World Bank and the UN's Food and Agriculture Organization, the IAASTD began work under Watson's command in 2004 with the aim of improving life, health and prosperity for millions of poor farmers (see *New Scientist*, 7 August 2004, p 17).

The underlying objective is to use farming know-how to raise the world's poor out of poverty, to even out the share of resources between rich and poor, and reverse the accelerating decimation of forests and natural resources on which survival of the world depends. All this against the backdrop of the 30 per cent contribution that agriculture makes to global warming.

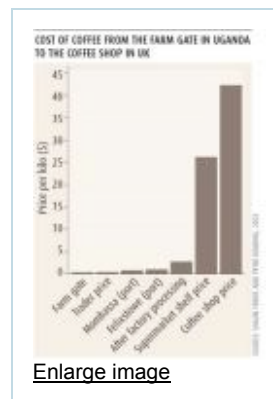
Now the science-based global assessment and the five regional assessments that accompany it are almost complete. The 400 scientific experts who have spent the past four years drafting the plan - with the help of 30 governments and 30 major charities and non-governmental organisations - reconvene next week in Johannesburg, South Africa, to agree on the final text.

The haggling will be fierce, however, because the draft strays into divisive economic, ideological, legal and political territory - way beyond its original brief of simply showcasing science and technology that can help poor farmers.

For some delegates, the proposed options for change are too radical to stomach. Representatives of the biotechnology industry, for example, stormed out of the negotiations earlier this year, arguing that the potential of genetically modified crops to help poor farmers and combat global warming was being overlooked, and undue weight given to alternatives such as organic farming.



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The two sides of the argument appear on pages 16 and 17 of this issue.

Equally controversial, the draft IAASTD plan advocates sweeping changes in world trade rules to overcome the economic barriers preventing poor farmers from selling and exporting their produce. It says that market forces alone can't be trusted to bring prosperity and food security to the poor, and that trade rules unfairly favouring rich countries and multinational corporations must be reformed (see "A fair deal?").

In another radical move, the plan calls for dramatic changes in property rights so that poor farmers - especially the women who do most of the agricultural work in poorer countries - can secure legal ownership of the land their families have occupied for centuries. Only then will they have the collateral to secure the loans and technology they need to improve their productivity, and to build the roads and transport links vital for delivering their produce to the marketplace (see "The long road").

As a whole, the proposals create a new paradigm for agriculture which gives farmers a central role in stabilising communities, lifting countries out of poverty, guaranteeing food security, reversing global warming and keeping a fair and sustainable balance between the resources available to farming and nature.

To achieve these goals, the pattern of subsidies needs to change radically, the draft argues. Subsidies that allow European and North American farmers to produce food surpluses so cheaply that they can be "dumped" way below cost price on markets in developing countries need to be scrapped, because they undercut locally produced food. Instead, subsidies should reward environmental stewardship and practices that reduce global warming, such as replanting trees and forests or growing crops in ways that minimise energy consumption, pesticide use and pollution.

Equally radical, anti-monopoly laws should be used to rein in the power and resources of the multinational companies that dominate world seed and fertiliser markets. Intellectual property laws also need to be reformed to prevent patents on novel crops from stifling new research and agricultural innovation.

But though the ideas are radical, critics say that the breathtakingly ambitious agenda is practically, economically and politically unfeasible. "They are proposing everything, and if you propose everything, then you don't prioritise anything," says one veteran of agricultural development who prefers not to be named. "We should have simply spent the money on agricultural research in Africa."

Another potential flaw is that the report makes no recommendations for plans of action. Instead, the global and regional assessments each put forward a series of options. Nor is there any obligation on governments, donors or private companies to act on or fund the report's proposals.

But backers of the IAASTD say that publication of such iconoclastic ideas in a final draft is in itself a triumph. "Even changing perceptions of farming is quite a shift from the past 50 years, and they should drive the agenda for the next 50," says a spokeswoman for the IAASTD.

And Watson himself is convinced that things cannot continue as they are. "If we do persist with business as usual, the world's people cannot be fed over the next half-century," he warns. "It will mean more environmental degradation, and the gap between the haves and have-nots will expand. We have an opportunity now to marshal our intellectual resources to avoid that sort of future, otherwise we face a world nobody would want to inhabit."

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A fair deal?

No wonder delegates from agrochemical companies decided to pull out of the IAASTD project. You can't mistake the accusatory tone within the guarded language of the draft summaries alleging widespread unfairness in trading rules and conventions that favour richer countries and multinationals at the cost of the poor.

In the IAASTD regional report on North America and Europe, the authors call for an end to offloading cheap agricultural surpluses in developing countries. The result of subsidies from rich governments, the surplus is so cheap that customers buy it instead of home-produced goods, destroying local farmers' only chance to sell their goods.

Equally iniquitous, says the report, are today's production chains for commodities such as coffee, which deny farmers a fair slice of the profit. Instead, most of it goes to processing, packaging and retailing companies further along the chain (see Graph).

The report attacks multinational seed and fertiliser companies based in rich countries for creating monopolies and acquiring patents which give them disproportionate power to charge exorbitant prices and ration supplies. "Four transnational companies provide 30 per cent of the

world's commercially available seeds," says the draft. "Two firms provide most of the fertiliser in North America and one firm has a 25 per cent market share for fertilisers in Europe."

The long road

Simple technologies and strategies that help African farmers avoid wasting rainwater and fertiliser could go a long way to raising yields, says the current draft of the IAASTD's regional report on sub-Saharan Africa. And changes to unfair global trade rules will help them sell their produce locally and abroad.

Roads could be the most important missing link. Without them, farmers can't reach the marketplace to sell their produce, either at home or in neighbouring countries. "There is a real positive correlation between the development of transportation infrastructure and agricultural intensification, yet sub-Saharan Africa has the lowest density of paved roads of any world region," says the report.

Per Pinstrup-Andersen, a specialist in agricultural development at Cornell University in Ithaca, New York, says the observation is spot-on. "The main obstacle to agricultural and economic development in sub-Saharan Africa is the lack of infrastructure," he says.

Pinstrup-Andersen says that there have been hundreds of innovations that successfully raised yields on sub-Saharan African farms, but the projects failed because farmers couldn't sell surpluses in more distant markets. Instead, the surpluses drove down local prices and bankrupted the very farmers who had borrowed money to pay for the innovations to raise yields.

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